# TRAC FY15 Research Planning and Elicitation



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This document provides the plan, results and recommendations for improvement for the fiscal year 2015 (FY15) research priorities elicitation, carried out by TRAC-Monterey (TRAC-MTRY) in support of the TRAC methods and research office (TRAC-MRO) and the TRAC research council.

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# TRAC FY15 Research Planning and Elicitation
## Chapter 1
## Introduction

## Overview

This document provides the plan, results and recommendations for improvement for the fiscal year 2015 (FY15) research priorities elicitation, carried out by TRAC—Monterey (TRAC—MTRY) in support of the TRAC methods and research office (TRAC-MRO) and the TRAC research council.

## Background

At the end of FY13, TRAC-MTRY conducted a research priorities elicitation from across TRAC in order to support the research council's FY14 priorities briefing to the TRAC board of directors (BOD). This plan for the FY15 research elicitation captures the lessons learned from the FY14 elicitation. See Marks and Nesbitt[1] for more details see.

## Research Council

As topics are identified and prioritized, the Research Council identifies a lead agency for each project and the availability and level of resourcing. The Research Council serves as a review agency, in conjunction with the TRAC stakeholder that originally generated the requirement, for products.

## Problem Statement

NLT SEP 2014, TRAC research council elicits and prioritizes research requirements from OneTRAC in order to provide the board of directors (BOD) with a recommended set of FY15 research tasks.

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[1]Christopher Marks and Peter Nesbitt. *TRAC FY14 Research Requirements Elicitation.* Tech. rep. TRAC-M-TM-13-059. 700 Dyer Road, Monterey, CA 93943-0692: Training and Doctrine Command Analysis Center—Monterey, 2013. URL: https://hq.tradoc.army.mil/sites/trac/Projects/976/SitePages/Home.aspx.

| Name | Title | TRAC Center |
|---|---|---|
| Mr. Paul Works | TRAC Research Director | TRAC HQ |
| Mr. Cody Beck | Scenario Enterprise Lead | TRAC-FLVN |
| Mr. Eric Johnson | M&S Enterprise Lead | TRAC-FLVN |
| Mr. Chad Mullis | Data Enterprise Lead | TRAC-WSMR |
| Dr. Sylvia Achionne-Noel | Senior Analyst | TRAC-WSMR |
| Mr. Moe Hayes | Modeling and Analysis | TRAC-LEE |
| Mr. Leroy Jackson | TRAC Technical Director & KM Enterprise Lead | TRAC-MTRY |
| Dr. Chris Morey | TRAC Study Directorate | TRAC |
| LTC Smith | Director, TRAC-MTRY | TRAC-MTRY |

**Table 1. TRAC Research Council.**
Note: the titles reflect the construct of the research council when this project started. It is not the current TRAC research council.

## Issues for Analysis

**Issue 1:** What are TRAC's research requirements for FY15?

    EEA 1.1: What are the research objectives?

**Issue 2:** What are the research topics, tools and methodologies for TRAC in FY15?

    EEA 2.1: Which research requirements, if addressed, have the potential to provide the most benefit to TRAC studies?

## Constraints, Limitations, and Assumptions

- Constraints

  - UFR's due September 2014.
  - BOD IPR September 2014.

- Limitations

- Assumptions

Constraints limit the project team's options to conduct the research. Limitations are a project team's inabilities to investigate issues within the sponsor's bounds. Assumptions are research-specific statements that are taken as true in the absence of facts.

# Technical Approach

The technical approach for this elicitation cycle is presented in Figure 1. The numbers in the figure represent the components while the arrows display the flow of information from the effort. The timeline, which is called out in the tan box, is articulated in the next section.
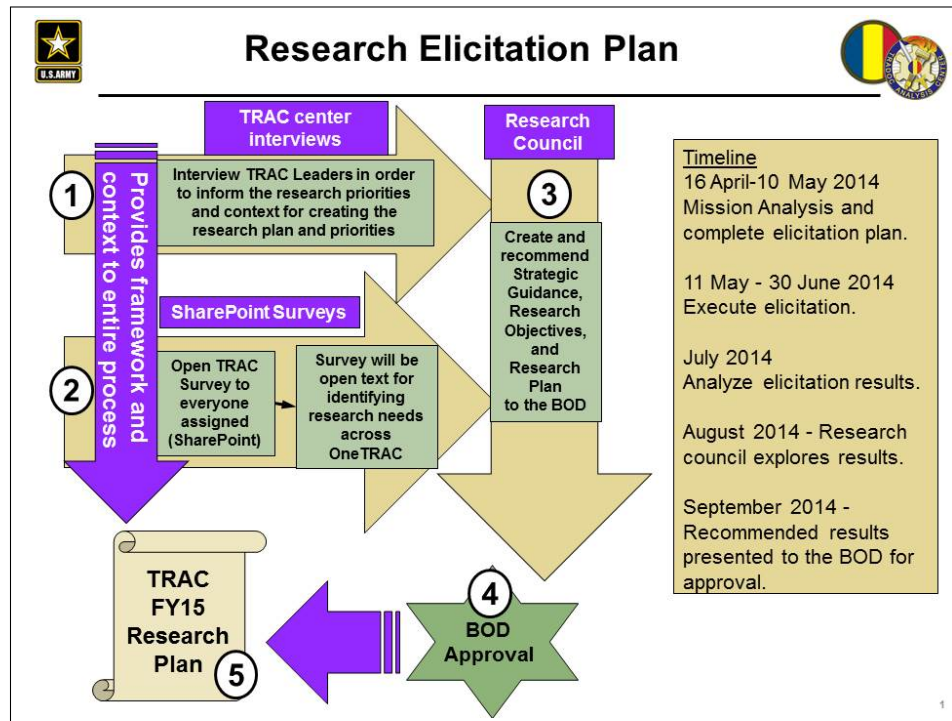


**Figure 1. FY15 Research Elicitation Plan**

The components of the elicitation process are:

1. TRAC leader interviews conducted in person at each center.

2. Volunteer surveys open to all TRAC via SharePoint.

3. Research council discussion of results and formulation of recommended FY15 TRAC research objectives

4. BOD shown results of elicitation and approval of research objectives

5. TRAC FY15 research plan published with research objectives

Steps 1 and 2 are covered in detail in Chapter 2, while steps 3 and 4 along with the approved research objectives are in Chapter 3. Chapter 4 concludes this report with lessons learned and recommendations for the next iteration of the elicitation process.

# Timeline

| | |
|---|---|
| 16 April - 10 May 2014 | Mission analysis and complete elicitation plan |
| 11 May - 30 Jun 2014 | Execute elicitation |
| July 2014 | Analyze elicitation results |
| August 2014 | Research council explores results and creates recommended research objectives for FY15 |
| September 2015 | Recommended research objectives and elicitation results presented to the BOD for approval |

# Chapter 2
# Interview and Survey Elicitation

## Leader Interviews

### The Process

Leader interviews are an important part of the elicitation process. The leadership of TRAC drive the strategy and are invloved in implementing the vision of not only TRAC leadership but that of TRADOC and the Army. The are in key positions to project the future capabilities and research topics in which we should be exploring to maintain TRAC's analytic relevance.

In order to interview the leadership, we first defined the bounds on the leaders we targeted for interviews. Since each TRAC center is uniquely structured, we decided to allow directorate chiefs at FLVN and WSMR as well as division chiefs at LEE to identify the leaders they wanted present at the interviews. We discuss the directorates and divisions interviewed in the subsequent subsection. We used the questionnaire presented in Appendix D to frame our discussions as prescriptive guides.

Most interviews were completed in offices or local conference rooms located at the perspective centers. They were informal settings in which the center host selected a team to be interviewed from those personnel in which they supervised. The SES directors, center Senior Military Analyst (SMA), and LEE were the exceptions in which they were interview individually. MAJ Mike Teter, the research coordinator for MTRY, and LTC Chris Smith, MTRY Director, were present at all interviews to ensure there were two sets of notes in which elicited feedback could be captured.

### Leader Interviews Schedule

TRAC-HQ personnel or divisions interviewed:

- Director - Ms. Blechinger

- Methods and Research Office - Mr. Works

The TRAC-HQ leader interviews were completed the 12th and 13th of May, 2014. The results are covered in Chapter 3 and the specific notes taken are in appendix C.

## TRAC-FLVN Leader Interviews

TRAC-FLVN personnel or divisions interviewed:

- Director - Mr. Pippen
- outgoing and incoming Deputy Director and SMA - COL Arnhart and COL Koller, respectively
- Analysis Directorate - Dr. Morey
- Studies Directorate - Mr. Decker
- Wargaming and Simulation Directorate - Mr. Johnson
- Operations Directorate - Ms. Fratzel
- Scenarios and Data Directorate - Mr. Beck

The TRAC-FLVN leader interviews were completed the 12th and 13th of May, 2014. The results are covered in Chapter 3 and the specific notes taken are in appendix C.

## TRAC-WSMR Leader Interviews

TRAC-WSMR personnel or divisions interviewed:

- Director - Dr. Lambert
- Deputy Director and SMA - COL Larimer
- Studies and Analysis I Directorate - Mr. Eaton
- Studies and Analysis II Directorate - Mr. Solis
- Studies and Analysis III Directorate (to include the Forward Analysis Division - Fort Bliss) - Mr. Gard
- Modeling and Simulation Directorate - Mr. Mullis
- Study Support Directorate - Mr. Huskey

The TRAC-WSMR leader interviews were completed the 9th through the 11th of June, 2014. The results are covered in Chapter 3 and the specific notes taken are in appendix C.

## TRAC-LEE Leader Interviews

TRAC-LEE personnel or divisions interviewed:

- Director - Mr. Byrd

- Modeling and Analysis Division - Mr. Hayes
- Studies Division - Mr. Hopson

The TRAC-LEE leader interviews were completed the 16th of June, 2014. The results are covered in Chapter 3 and the specific notes taken are in appendix C.

# OneTRAC Elicitation

For the OneTRAC elicitation, we constructed a survey which was distributed over SharePoint and was open for the entire TRAC workforce from the 12th of May through the15th of July 2014.

## Survey Construction

For the construction of the survey, we used free text fields for the elicitation in an effort to ensure no intellectual anchoring among respondents. Once someone decided to take the survey and clicked through the SharePoint link, the survey was a simple process which opened with a warning screen for the respondent to submit the survey at the end. (Displayed in Figure 1)



**Figure 1. First Page of Survey**

The second page of the survey, displayed in Figure 2, is the research elicitation in which the respondent was asked to give a short sentence about the research requirement followed by a lengthy description. The raw results from the SharePoint survey are in Appendix B. The respondent is also asked to identify which TRAC center would be a stakeholder and what the priority of research should be in regards to OneTRAC.

Following completion of the the second page, the respondent is asked if they have another research requirement. (See Figure 3). If they answer yes they will be give a new page similar to that presented in Figure 2 in which they have the opportunity to identify more research requirements. Each respondent can submit up to four research requirements per survey. The

**Figure 2. Second Page of Survey**

respondents were also not limited to only one survey but could submit multiple surveys if they had more than four research requirements to submit.



**Figure 3. Third Page of Survey**

8

If the respondent did not have another research requirement the would be directed to the last page of the survey (Figure 4) in which they were asked their pay grade, which TRAC-cneter they were assigned and if they had previously submitted a different survey.



**Figure 4. Last Page of Survey**

Once the surveys were complete, we clustered results by general topics and describe in detail in Chapter 3.

## SharePoint Survey Demographics

The demographics of the participants who chose to fill out the survey were tracked by two categories, pay grade and TRAC-center. The pay grades are displayed in Figure 5 and the center participation is displayed in Figure 6.

| Rank/Grade | Number of surveys |
|---|---|
| O6/GS15 and above | 1 |
| O5/GS13-14 | 5 |
| O4/GS12 | 4 |
| O3/GS11 and Below | 2 |

Figure 5. Pay Grade of Survey Respondents

| Center | Number of surveys |
|---|---|
| HQ | 2 |
| FLVN | 3 |
| LEE | 2 |
| MTRY | 2 |
| WSMR | 3 |

Figure 6. TRAC-Center of Survey Respondents

# Chapter 3
# Results from Research Elicitation

We first clustered the results into categorical types. We extrapolated research objectives from the types of topics and the stakeholder of the topic. We did this by allowing one "vote" per live interview session while counting the SharePoint survey results as one collective interview session for voting purposes. In this Chapter, we cover the recommended research objectives and supporting count of topics within the research objective.

## Recommended Research Objectives

The results of the interviews were clustered in like-type categories in which the research objectives were derived. Not every topic fit nicely into a category type, those topics are captured in the "other" category. The research objectives, with brief descriptions, are:

- Tradespace – Develop and communicate analysis of requirements tradeoffs affecting system design for decision makers.

- Analytics – Expand current capability to leverage meaningful patterns from new sources and forms of data.

- CXXI, AWARS, LBC – Enhance COMBATXXI, AWARS and LBC to further model additional military systems.

- OneTRAC – Investigate opportunities to coordinate TRAC activities with other agencies and across Centers.

- Human Dimensions – Account for the effects of how humans function in a system for representation in modeling and analysis as well as increasing performance and innovation.

- Cyber – Categorize, represent, measure and analyze cyber effects in analysis to include simulation.

- Other – Examples include subterranean effects, utility curves, value functions, aviation acquire algorithms among other t6opics that did not fit one of the previous categories.

There were 12 survey responses which identified multiple research requirements. They were counted as one vote. There were 19 Interview sessions across the TRAC Centers (HQ – 2, FLVN – 7, WSMR – 7, LEE -3). The interviews and surveys can span multiple objectives, but multiple research requirements identified within the objective identified by the surveys or

a single interview session are not counted separately and are not represented multiple times within the same objective. Figure 1 displays the interest expressed by research objective while Figure 2 displays interest in objective by TRAC center.
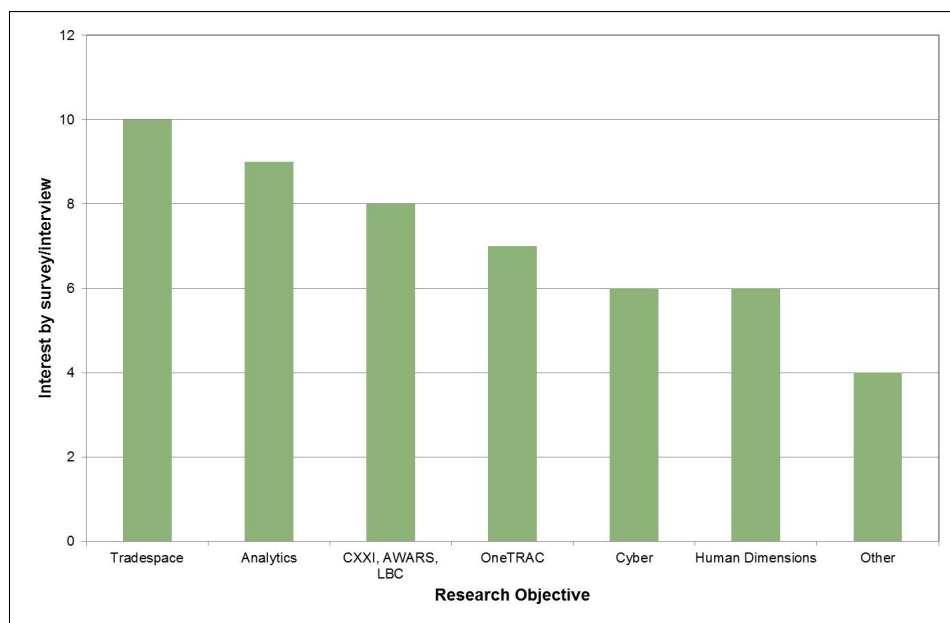


**Figure 1. Research Objective Interest by Vote**

| | Analytics | Cyber | CXXI, AWARS, LBC | Trade space | Human Dimensions | OneTRAC | Other |
|---|---|---|---|---|---|---|---|
| TRAC-HQ | | | | | 1* | 1* | |
| FLVN | 4* | 3 | 8 | 4* | 2* | 5* | 2 |
| LEE | | | 3* | | | | |
| WSMR | 7* | 3 | 6 | 7* | 2* | 4* | 1 |
| Survey | 3 | 1 | 4 | 2 | 3 | 3 | 7 |
| *Center director emphasis | | | | | | | |

**Figure 2. Research Objective Interest by TRAC-Center**

# Supporting Topics

During the interviews and surveys, there were 86 topics recommended as research requirements of which 61 were unique topics. Binning the topics by research objective without regard for which venue suggested the topic results in Figure 3.

The specific topics supporting the category type are listed in Appendix A.
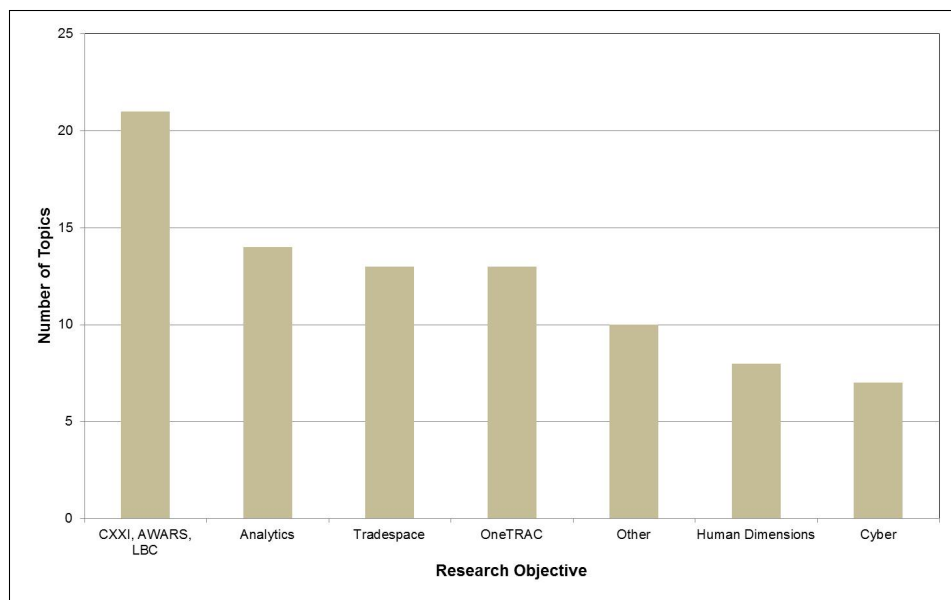
**Figure 3. Results by Topic**

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# Chapter 4
# Conclusions and Lessons Learned

## Approval Process

The results of the research elicitation were presented to the TRAC Research council for consideration during the research council meeting hosted by TRAC-MTRY on the 19th and 20th of August, 2014. The research council discussed the results and agreed to present the recommended TRAC Research Objectives in Chapter 3 to the BOD at their next scheduled meeting.

The BOD was briefed on the results of the research elicitation along with the recommended FY15 Research Objectives with descriptions during their meeting hosted by TRAC-MTRY on the 24th of September, 2014. The BOD approved the FY15 TRAC Research Objectives to be incorporated into the FY15 TRAC Research Plan.

## Recommendations for Future Efforts

### Maintain

With the dissolution of the TRAC-MRO, MTRY is the lead for conducting the annual research elicitation for TRAC. It is recommended to maintain this elicitation annually through surveys and in-person interviews. We also recommend having the MTRY Director and Research Coordinator present for all interviews during the process because it helped to have two sets of notes to compare throughout the year.

For organizational purposes, further recommendations for maintaining are listed below:

- Using a distributed survey available to all TRAC employees

- Conducting a MTRY Director's workforce brief at each center

- Interviewing TRAC leadership in flexible settings

- Working through the center operations to schedule the interviews with each directorate/division

- Executing the same time line presented in Chapter 1

## Changes or Additions

Every year TRAC conducts the research elicitation allows for opportunities to continually improve the process. In this section, we recommend changes or additions that will enhance the elicitation effort for the next year. A major addition would be using the elicitation as an opportunity to show the progress towards research objectives since last year to the leadership during the interviews or during the center workforce addresses. Another addition we recommend is to include the following FY TRAC-MTRY work plan into the elicitation. By the spring TRAC-MTRY's work plan for the next fiscal year is in the development stages. The research interviews are an opportunity to gage the interests in the different project proposals for the next year.

Again, for organizational purposes, we recommend the following changes or implementations:

- Incorporating the re-established offices of the Principle Analysts at FLVN and WSMR
- Gauging TRAC-MTRY work plan topical interest
- Distributing the questionnaires prior to the interviews
- Conducting a mid-year review during the April BOD
- Framing the elicitation effort within the TRAC Strategy
- Providing a feedback loop to the centers for current research
- Typing a Memorandum For Record (MFR) within a week of completing the interviews which captures who was at the session and topics covered. This should be sent to the attendees for comment to ensure completeness.

# Appendix A
# Research Topics by Objective Category

These short titled topics were captured from the SharePoint surveys or from interviews

Big Data Set Exploration Techniques

Data Fusion of hard and soft information

Data Visualization Techniques (RGIS)

Design Thinking approach to problem solving

Text Analytics

Use of R for survey analisys and text mining

Using Open Data Sources

Nano/Micro/Bio technology analysis

**Figure A–1. Analytics Topics**

LBC Interface for AWARs
Optimization for Criteria to tasking queue in AWARs
Aviation asset priorities (medevac/casevac) in AWARs
Battle Damage Assessment methodology AWARS
Dynamic convoy routing based on prior attacks
Post processing of AWARS charts (Visualization)
Short Range Observe (SRO) switching with regular search COMBATXXI
Entity behavior in Urban OE in COMBATXXI
military effects against non-acquirable urban targets in COMBATXXI
Management of multiple course of action via SA-Triggers COMBATXXI
Misidentification representation in COMBATXXI
Mapping target fusion within simulation in COMBATXXI
Acquisition for simulation 3rd gen (COMBATXXI)
Using COMBATXXI as Monte Carlo simulation to build distributions
Including LBC in AWARS
Risk assessment using modeling and simulation
LBC Attrition Capability
LBC Facility Location Tool
LBC Decision Support Tool (Web based)
GPS Jamming in COMBATXXI
Combat model data use

Figure A–2. COMBATXXI, AWARS, LBC Topics

Cyber Analysis

Layered Network Effects

Modeling cyber in simulations

Figure A–3. Cyber Topics

Agent Based modeling
Human cognitive behaviors and dimensions
Improve Decision making in Models
Leveraging upcoming trends (innovation)
Optimizing Soldier/leader performance
Human dimension Analysis

Figure A–4. Human Dimensions Topics

| |
|---|
| Decision Analysis Support Tools (Value Focus) |
| Methodology for analyzing across DOTMLPF |
| Trade space assessment development |
| F2025-holistic acquisition and force design |
| Operational joint cost model |
| Merging Competing interests (Cluster) |

Figure A–5. Tradespace Analysis Topics

| |
|---|
| OneTRAC Searchable Library |
| Integration of studies into POM/CPR/LiRA cycle |
| KM Development |
| Measurement Space Drill Support |
| Front-end-analysis |
| Integrating Joint considerations into studies |
| JTF Structure and SOF/Conventional mix |

Figure A–6. OneTRAC Topics

| |
|---|
| Updated sustainment rules for TAA (SOF) |
| Agent Based modeling. |
| Aviation Acquire Algorithm |
| Computer aided mapping exercise improvement |
| How to create future unit MTOEs using USAFMSA |
| Low-level Campaign Model |
| Modeling entity behavior in response to network (WINN-T |
| SPADES Technical Review |
| Streamline Combat Model Runs |
| Subterranean |
| Utility Curves (Value Functions) |

Figure A–7. Other Topics

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# Appendix B
# SharePoint Survey Raw Results

| In one sentence, briefly summarize a research requirement in the areas of topics, techniques, and methodologies. | Please describe in further detail the need identified. | Which TRAC center(s)/Directorate would most likely be a stakeholder? | With regards to OneTRAC, What is the priority of this research? |
|---|---|---|---|
| Agent Based modeling. | Exploration of agent based modeling and how it might highlight different results than existing techniques. Might allow us to answer different kinds of decision maker questions. | OneTRAC | Moderate - High |
| Force 2025 methodologies - The Army approach to provide an umbrella to our force design. | The Army has many disparate approaches to justifying acquisition needs, force structure and funding levels. There should be a methodology in which this is done in a concerted effort. | OneTRAC; FLVN; LEE; WSMR | Moderate - High |
| Sustainment unit workload - capability factors | The TAA process uses a lot of "existance rules" for various sustainment - logistics unit capabilites to support the force. If there were better workload based factors available, then the sustainment - logistics force structure to support a given operational force, especially SOF, could be better tailored to the operational force. As it stands now, a generic SOF operational force will be supported by a full CSSB. There are some legacy systems like FASTALS that can "generate" a sustainment - logistics force, but it can rapidly spiral out of control. | LEE | Moderate - High |
| Cluster Munitions | I heard at the last TRAC workforce address that this might be an upcoming project. I don't think TRAC has existing research done to frame the issue. Legal, policy, international implications. Might be a research requirement for the near future. Might also be a template for how TRAC might work in the future topics (merging different and sometime competing perspectives) and assisting with decision analysis based on those competing interests. | WSMR; | Moderate - Low |
| Utility Curves | In order to receive warfighter input on the 'good enough' capabilities of gap attributes, irrespective of the technology solution, a recent study team applied the utility curve technique. In an event called a Warfighter Utility Workshop, the team developed utility curves (also called value curves or value functions). To my knowledge, there is nothing in terms of a TRAC SoP or CoBP or diliberate research concerning this topic.<br>It would be helpful for study leads and teams to understand what a utility curve is, whether it is appriate for their study or not, what a utility curve workshop should look like and what kind of results to expect, and how to use the results to inform various efforts throughout the study.<br>Additionally, there needs to be sufficient research behind techniques that we use in our studies in order to keep our analysis defensible. | FLVN | Moderate - High |
| COMBATXXI Urban Operations - Movement, Search and Effects in very complex urban environment. | A new COMBATXXI tool development that will enhance scenario building clearing capabilities already developed using Python Scripts to an operational database behavior methodology per the current Maneuver Tool (MT) methodology that will be oriented towards the Urban Operational Environment (OE).<br><br>1. Script-like management of entity/unit formation movement to approach buildings, Movement through buildings, Movement through tunnels and UGFs. Need to be able to maneuver and/or move unit, units, individual or individuals (Team/Squad/Platoon/ Soldier/Buddy Team/Manned Vehicle/Unmanned Ground Vehicle (UGV)/Unmanned Arial System (UAS)) though out the Urban OE in all of its complexities. These maneuvers should include movement through buildings (exterior doors and windows, hallways, interior doors, individual rooms, stairs, hole drops/climbs, dynamically created wall breaches and roof tops), through UGFs/UGTs (entrances, halls, rooms, hole drops/climbs and stairs), between buildings (tunnels, courtyards, alleys, rooftops and dynamic breaches) and around urban clutter (vehicles, exterior walls, junk piles, etc.). Need to manage the coordination of these maneuvers at all levels (unit, units, individual or individuals). The coordination should include leadership roles (unit commanders), unmanned controllers (entity equipment) and ad-hoc networks (dynamically change network assignments). In addition to | WSMR | Moderate - Low |
| COMBATXXI Urban Operations - Movement, Search and Effects in very complex urban environment. | 2. Short Range Observe (SRO) switching with regular search. Need to manage which search technique is employed depending on situation. Regular search when outside of building. SRO search when conducting clearing operations indoor or interacting with enemy indoors. Regular search when inside of building but observing targets outside of building. And default over-rides for unique situations. | WSMR | Moderate - Low |

| | | | |
|---|---|---|---|
| COMBATXXI Urban Operations - Movement, Search and Effects in very complex urban environment. | 3. Applying Effects. Need to apply military effects against non-acquirable urban targets such as dynamic breaches (walls, floors, ceilings and closed doors), pyrotechnics (smoke, flash bangs and small explosives) and self-illumination (rooms, halls and tunnels). These effects could be predetermined (munitions-target point pairings) and executed per decision making process. | WSMR | Moderate - Low |
| COMBATXXI Urban Operations - Movement, Search and Effects in very complex urban environment. | 4. Management of multiple course of action via SA-Triggers. Need to determine which course of action (COA) to select at unit or entity level per dynamic decision making. Capability should be part of UMT rather than executing a specific BSL. Methodology may include COP interrogation, CBUS, flag checking or other defined method (e.g., HTN recalculation event). Processes would be set up to monitor information and set trigger events within UMT that would execute COA at decision point or interrupt current COA (e.g., disengagement criteria triggering withdrawal or surrender). Detailed logging of information and decisions will be required for debugging and analysis. | WSMR | Moderate - Low |
| SPADES Lexicographical Interpreter Review | System for Periodically Apportioning Demands (SPADES) is a "supply and demand" tool; used for sufficiency analysis of examining Army forces ability to meet demand signals (i.e. BCTs versus global requirements). The purpose of this review would be to ensure SPADES is functioning properly (mini V&V). Task would be to review the SPADES engine and report any logic areas. | OneTRAC | Moderate - High |
| Test - Data Mining | Application of data mining to support TRAC analysis. What is the breadth of open source data they we may be able to access / leverage to support TRAC analysis? What tools does TRAC have to incorporate these sources? What are the risks of using this type of data source? | OneTRAC | Moderate - High |
| Streamlining the setup of combat models | Study teams wishing to use our major combat models (CXXI, etc) currently need a lead time of months for the runs to be completed. Modernized techniques might be able to further streamline the process. | OneTRAC;#FLVN;#WSMR | Moderate - Low |
| Text Analytics Capability | The organization needs appropriate tools and knowledge sharing to support rapid text analysis. At TRAC-WSMR we have a recurring need for text analytic tools to evaluate large amounts of text. Project time constraints frequently prevent analysts from developing the text analytic tools and techniques in stride with project demands. For a time, TRAC-WSMR purchased an add-on text analyzer module for PASW Modeler, but the learning curve was steep, and there was insufficient training available. The software is no longer licensed at TRAC-WSMR. In the past, I or my subordinates have needed such tools for evaluating open-ended survey responses, FBCB2 chat and other military communications, and, most recently, Twitter feeds. We wanted to analyze social media feeds to identify humanitarian assistance needs in Syria, and, assuming the findings bore fruit, eventually develop an automated utility for such analysis that could be used by non-ORSA in CENTCOM-Jordan. | OneTRAC | Moderate - High |
| One TRAC does not currently have the ability to search documents, reports, research, or other products across its centers. | Research options for a searchable library/database to house TRAC products on both classified and unclassified networks. The library/database should include have the ability to search key words and topics. Is should also capture integrate historical documents that may only be in paper format. | OneTRAC | Moderate - High |
| Apply analytical techniques to minimize threat to rotary wing aircraft in a multi-faceted threat environment. | There does not seem to exist any analytical approach to minimizing the aggregate threat to rotary wing aircraft from small arms, AAA, IR and Radar SAMs (i.e. at what altitude is the total threat value minimized?) | FLVN | Moderate - Low |
| Big data. | Continue to explore techniques to explore big data sets that might allow us to address different questions from decision makers. | OneTRAC | Moderate-High |
| Innovation | In MRO, we are looking at this topic from both a micro level-How can TRAC use innovation to continue to be a strong organization and a MACRO level--what is the next "big thing" wrt innovation. There is a body of social science that looks at the topic, but how do we leverage this to help our analysts do a better job on a day to day basis, while spoting key trends (next big thing) for future analytical work? | OneTRAC | High |

B-3

| | | | |
|---|---|---|---|
| Identify minimum requirements for Theater level combat simulation | Currently AWARS can simulate up to Div/Corps/JTF.  Several recent efforts have wanted/needed a theater or campaign level combat outcomes.  Typically this would be a CAA area but they have challenges with turn around time and capacity due to TAA requirements.  We have been discussing ideas on how to get at a low resolution campaign tool that provides acceptable (i.e. not replacing JICM/COSAGE but something in between JICM and AWARS) results. | FLVN | Moderate-Low |
| Improving Cognitive Decision Making in Army Models and Simulations | Examine decision-making and leadership research to determine possible gaps between academic theories and modeling and simulation efforts.  Seek to improve decision processes in current TRAC models. | OneTRAC | Moderate-High |
| Cyber topics. | Cyber can affect our soldiers/plans beyond just how they affect us on the battlefield.  Robust cyber analysis can allow us to field cyber related questions/analysis. | OneTRAC; FLVN | Moderate-High |
| "Front End Analysis" | Recent Gender Study required a high level of "front end analysis"  I can see where we did a good job with some of our front end analysis, and am aware of places we could have done a better job.  How are other study leads using front end analysis?  How can this process be expedited?  Should it be expedited?  Are we doing it right? | OneTRAC | Moderate-High |
| Subterranean Operations. | The topic seems to be one spanning from SOCOM over to the conventional force.  We might want to start developing scenarios and M&S capability that will allow for this type of analysis. | OneTRAC | Moderate-Low |
| Model JTF | Why do certain JTF structures work well and others fail to make progress in their AOR?  How can a JTF be structured to work well with joint, interagency, international and host nation authorities?  What is the optimal interplay between conventional forces and special operations forces to increase chances for successful mission accomplishment?  This is something that could be done in conjunction with CAA. | OneTRAC | Moderate-High |

# Appendix C
# Interview Notes

To guide the interviews we used a questions to frame the interviews but let the flow be driven b topic rather than a prescriptive formula for each interview. The questionnaire is displayed in Appendix D. In this appendix, we display the topics as they were discussed in the interviews of each directorate/division of each center.

## TRAC-HQ Interviews Notes

### Table C–1. Director, TRAC

| Type | Topic |
| --- | --- |
| Human Dimensions | Human dimension Analysis |
| OneTRAC | Measurement Space Drill Support |

## TRAC-FLVN leader Interview Notes

### Table C–2. FLVN-Director

| Type | Topic |
| --- | --- |
| Analytics | Data Visualization Techniques (RGIS) |
| Human Dimensions | Optimizing Soldier/leader performance |
| Tradespace | F2025-holistic acquisition and force design |
| OneTRAC | Measurement Space Drill Support |

### Table C–3. FLVN-Deputy Director

| Type | Topic |
| --- | --- |
| Analytics | Data Fusion of hard and soft information |
| Tradespace | Decision Analysis Support Tools (Value Focus) |
| Human Dimensions | Human cognitive behaviors and dimensions |
| Analytics | Nano/Micro/Bio technology analysis |
| Cyber | Cyber Analysis |

### Table C–4. FLVN-Analysis Directorate

| Type | Topic |
| --- | --- |
| CXXI, AWARS, LBC | Combat model data use |
| Analytics | Big Data Set Exploration Techniques |
| OneTRAC | OneTRAC Searchable Library |
| Tradespace | Decision Analysis Support Tools (Value Focus) |
| Cyber | Cyber Analysis |

### Table C–5. FLVN-Studies Directorate

| Type | Topic |
| --- | --- |
| Tradespace | Decision Analysis Support Tools (Value Focus) |

### Table C–6. FLVN-Wargaming and Simulation Directorate

| Type | Topic |
| --- | --- |
| CXXI, AWARS, LBC | LBC Interface for AWARs |
| CXXI, AWARS, LBC | Optimization for Criteria to tasking queue in AWARs |
| CXXI, AWARS, LBC | Aviation asset prioirities (medivac/casevac) in AWARs |
| Other | Computer aided mapping exercise improvement |
| CXXI, AWARS, LBC | Battle Damage Assessment methodology AWARS |
| CXXI, AWARS, LBC | Dynamic convoy routing based on prioir attacks |
| CXXI, AWARS, LBC | Postprocessing of awars charts (Visualization) |
| CXXI, AWARS, LBC | Including LBC in AWARS |

### Table C–7. FLVN-Operations Directorate

| Type | Topic |
| --- | --- |
| OneTRAC | KM Development |
| OneTRAC | Measurement Space Drill Support |
| OneTRAC | OneTRAC Searchable Library |

### Table C–8. FLVN-Scenarios and Data Directorate

| Type | Topic |
| --- | --- |
| Other | How to create future unit MTOEs using USAFMSA |
| Cyber | Modeling cyber in simulations |

# TRAC-WSMR Leader Interview Notes

### Table C–9. WSMR-Director

| Type | Topic |
| --- | --- |
| OneTRAC | Integration of studies into POM/CPR/LiRA cycle |
| OneTRAC | Measurement Space Drill Support |
| Analytics | Text Analytics |
| Human Dimensions | Human cognitive behaviors and dimensions |
| Tradespace | Methodology for analyzing across DOTMLPF |
| OneTRAC | OneTRAC Searchable Library |

### Table C–10. WSMR-Deputy Director

| Type | Topic |
| --- | --- |
| Tradespace | Methodology for analyzing across DOTMLPF |
| Tradespace | F2025-holistic acquisition and force design |

### Table C–11. WSMR-Studies and Analysis I Directorate

| Type | Topic |
| --- | --- |
| CXXI, AWARS, LBC | GPS Jamming in COMBATXXI |
| Tradespace | Tradespace assessment develpoment |
| OneTRAC | Integrating Joint considerations into studies |

### Table C–12. WSMR- Studies and Analysis II Directorate

| Type | Topic |
| --- | --- |
| Tradespace | Methodology for analyzing across DOTMLPF |
| Analytics | Use of R for survey analisys and text mining |
| Human Dimensions | Optimizing Soldier/leader performance |
| Tradespace | Tradespace assessment develpoment |
| Analytics | Text Analytics |

**Table C–13. WSMR - Studies and Analysis III Directorate**

| Type | Topic |
| --- | --- |
| Analytics | Design Thinking approach to problem solving |
| Other | Modeling entity behavior in response to network (WINN-T) |
| Cyber | Layered Network Effects |
| CXXI, AWARS, LBC | Risk assessment using modeling and simulation |
| Analytics | Data Fusion of hard and soft information |
| Analytics | Text Analytics |

**Table C–14. WSMR - Modeling and Simulation Directorate**

| Type | Topic |
| --- | --- |
| CXXI, AWARS, LBC | Missindentification respresentation in CXXI |
| CXXI, AWARS, LBC | Mapping target fusion within simulation in CXXI |
| CXXI, AWARS, LBC | Acquisition for simulation 3rd gen (CXXI) |
| CXXI, AWARS, LBC | Using CXXI as monte carlo simulation to build distributions |

**Table C–15. WSMR- Study Support Directorate**

| Type | Topic |
| --- | --- |
| Tradespace | Operational joint cost model |
| Cyber | Layered Network Effects |
| Cyber | Modeling cyber in simulations |
| Analytics | Text Analytics |

# TRAC-LEE Leader Interview Notes

### Table C–16. LEE-Director

| Type | Topic |
|------|-------|
| CXXI, AWARS, LBC | LBC Decision Support Tool (Web based) |

### Table C–17. LEE-Modeling and Analysis Division

| Type | Topic |
|------|-------|
| CXXI, AWARS, LBC | LBC Attrition Capability |
| CXXI, AWARS, LBC | LBC Facility Location Tool |

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# Appendix D
# Questionnaire

FY15 TRAC Research Requirements Elicitation Interviews

**Describe a research requirement in the areas of topics, techniques, and methodologies.**

**Which TRAC center(s)/Directorate would most likely be a stakeholder?**

**With regards to OneTRAC, What is the priority of this research?**

What are your top three priorities for this next FY?

Of the research requirements, what priority order would you assign this need?

How relevant are the current research objectives? What about in the context of 2025?

What dates in the past year did you have a measurement space drill and what venue was used (onsite, VTC, DCO, etc.)?

Please make sure to complete survey on-line.

# Appendix E
# References

[1]  Christopher Marks and Peter Nesbitt. *TRAC FY14 Research Requirements Elicitation.* Tech. rep. TRAC-M-TM-13-059. 700 Dyer Road, Monterey, CA 93943-0692: Training and Doctrine Command Analysis Center—Monterey, 2013. URL: `https://hq.tradoc.army.mil/sites/trac/Projects/976/SitePages/Home.aspx`.

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# Appendix F
# Glossary

| | |
|---|---|
| AWARS | Advanced Warfare Simulation |
| BCT | Brigade Combat Team |
| BOD | Board of Directors |
| EEA | Essential Elements of Analysis |
| FLVN | Fort Leavenworth |
| FY | Fiscal Year |
| KM | Knowledge Management |
| LBC | Logistics Battle Command |
| LEE | Fort Lee |
| M&S | Modeling and Simulation |
| MADM | Multi-Attribute Decision Making |
| MRO | Methods and Research Office |
| MTRY | Monterey |
| SES | Senior Executive Schedule |
| SMA | Senior Military Analyst |
| SME | Subject Matter Expert |
| TRAC | Training and Doctrine Command Analysis Center |
| TRADOC | U.S. Army Training and Doctrine Command |